

## LISTING OF CLAIMS

1-220. (Cancelled)

221. (Currently Amended)

A method of bovine artificial insemination comprising the steps of:

- a. collecting sperm cells from a male bovine;
- b. staining said sperm cells with 38 micro-molar Hoechst 33342;
- c. determining the sex characteristic of a plurality of said stained sperm cells with a flow cytometer;
- d. sorting said stained sperm cells according to the determination of their sex characteristic at a rate of at least 500 sorts per second with a flow cytometer operating at at least 50 psi;
- e. concentrating said sperm cells following said step of sorting;
- f. establishing an artificial insemination sample having no more than ~~about 350,000~~ 300,000 of said sorted sperm cells;
- g. inserting said artificial insemination sample into a female bovine;
- h. fertilizing at least one egg within said female bovine at success levels statistically comparable to an unsorted artificial insemination sample having about an equal number of sperm cells.

222. (Currently Amended)

A method of bovine artificial insemination as described in claim 221 wherein said step of inserting said artificial insemination sample into a female bovine comprises the step of inserting said artificial insemination sample into a female bovine ~~no more than about 5 hours~~ 5 to 9 hours following said step of sorting.

223. (Cancelled)

224. (Previously Presented)

A method of bovine artificial insemination as described in claim 221 wherein said step of inserting said artificial insemination sample into a female bovine comprises the step of inserting one-half of said artificial insemination sample into each uterine horn of said female bovine.

225. (Currently Amended)

A method of bovine artificial insemination as described in claim 221 wherein said step of inserting said artificial insemination sample into a female bovine comprises the step of inserting said artificial insemination sample into a female bovine ~~no more than about 6 hours~~ 6 to 26 hours following observed standing estrus of said female bovine.

226. (Cancelled)

227. (Currently Amended)

A method of bovine artificial insemination as described in claim 221 further comprising the step of cooling said artificial insemination sample to ~~at least~~ 5 degrees Celsius and transporting said cooled artificial insemination sample at 3 to 5 degrees Celsius prior to said step of inserting.